

Application No. 09/858,096
Amendment dated March 8, 2004
Reply to Office Action of December 15, 2003

REMARKS/ARGUMENTS

Claims 1-19 are pending in the application; the status of the claims is as follows:

Claims 6 and 11 are allowed.

Claims 1-3, 10, 12-15, and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,239,370 to Yamaguchi ("Yamaguchi").

Claims 4, 5, 7, and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamaguchi, and further in view of U.S. Statutory Invention Registration No. H1506 to Beretta ("Beretta").

Claims 8, 9, 17, and 18 are rejected under 35 U.S.C. § 112 as there being insufficient antecedent basis for this limitation in the claim.

The Office Action does not acknowledge a claim for foreign priority under 35 U.S.C. § 119 (a)-(d), which is contained in the Declaration and Power of Attorney. Submitted herewith is a copy of the postcard receipt showing that the U.S. Patent and Trademark Office acknowledged receipt of the Certified Copy of Priority Document on May 15, 2001. Acknowledgement of our claim for foreign priority and receipt of the priority document is respectfully requested.

To date, no Notice of Draftsperson's Patent Drawing Review has been received. Applicants respectfully request receipt of this document when it becomes available. Please note that the original drawings filed in the patent application are "formal" drawings.

Claims 1-5, 8, 9, 13, 14, 17, and 18 have been amended to more particularly point out and distinctly claim the subject matter of the invention. These changes do not introduce any new matter. Claims 10, 12, 15, 16, and 19 have been cancelled.

Application No. 09/858,096
Amendment dated March 8, 2004
Reply to Office Action of December 15, 2003

Interview Summary

A telephonic interview was conducted between the undersigned and Examiner Amini on February 6, 2004. Topics discussed included:

- (1) whether Yamaguchi teaches ‘shifting’ color data, when Yamaguchi’s Figs. 6 and 7, and eqs. (11)-(13) clearly show scaling the color values by a factor M4/M1;
- (2) whether Yamaguchi teaches to maintain a color’s position along the gray axis while the color is being shifted, when Fig. 6 and eqn. (11) clearly show that a color’s position along the L* axis is changed; and
- (3) why the Examiner thought ‘color space’ was unclear.

No agreement was reached on the topics discussed.

The undersigned stated that he would discuss amending the claims with his client, but did not commit to amending the claims. The Examiner offered to review any proposed claim amendments.

35 U.S.C. § 112 Rejection

Claims 8, 9, 17, and 18 have been amended so as to remove references to a ‘color space’ from the claims. Accordingly, it is respectfully submitted that the amendments moot the rejection of claims 8, 9, 17, and 18 under the second paragraph of 35 U.S.C. § 112.

35 U.S.C. § 103(a) Rejections

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

Application No. 09/858,096
Amendment dated March 8, 2004
Reply to Office Action of December 15, 2003

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (D) Reasonable expectation of success is the standard with which obviousness is determined. MPEP 2141.01 citing *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

The rejection of claims 1-3, 10, 12-15, and 19 under 35 U.S.C. § 103(a), as being unpatentable over Yamaguchi, is respectfully traversed because when taken as a whole, the cited reference does not fairly teach or suggest the claimed invention.

The present invention provides a relatively efficient process for converting colors from a first gamut into colors in a second gamut. As stated in the disclosure of the present application, a previously known color conversion technique shifts all the colors in the first gamut by an amount needed to shift the gray axis of the first gamut to coincide with the gray axis of the second gamut. However, this may cause noticeable changes in the hue of highly saturated colors. For example, if matching the gray axes requires shifting the first gamut toward red colors, then highly saturated blues will take on a purple hue. The color change can be corrected by ‘rotating’ the affected colors. However, this is computationally expensive because of the extensive use of trigonometric functions.

The present invention also shifts colors from the first gamut to the second gamut. However, all colors are not shifted by the same amount. Rather, the amount by which a color is shifted is an inverse function of the color difference, e.g., distance, between the color and the gray axis of the gamut. Because highly saturated colors are relatively far from the gray axis, these colors are shifted by a small amount. This minimizes the change

in hue and avoids the computationally expensive correction typically used in the prior art. In addition, the claimed invention shifts the colors without significantly changing the lightness of the colors, thereby maintaining the gray balance of the image.

These feature of the invention, which are not found in the cited art, are found throughout the present claims. For example, claim 1 recites “shifting each color of said image data in the same direction as a direction from a gray axis of said first Gamut towards a gray axis of said second Gamut, by an amount corresponding to a distance of said color from the gray axis of said first Gamut....”

In contrast, Yamaguchi discloses a method of color correction that merely shifts *some* colors *toward the achromatic axis* of the output Gamut. Specifically, colors that are farther from the achromatic axis of the *output Gamut* than a threshold distance, e.g. 70% of the distance to the surface of the output Gamut, are scaled linearly so that all colors over the threshold are brought within the output Gamut. See Figs. 6 and 7, eqs. (11)-(13), and the description at column 9, lines 14-47. Thus, Yamaguchi does not teach or suggest that all colors are shifted *in the same direction*, e.g., parallel to each other, by an amount that is a function of a distance from the gray axis of the *input gamut*. Indeed, Yamaguchi teaches away from the claimed features.

Yamaguchi also teaches away from the feature of the claims wherein “a position of each color along said gray axis is maintained when said color is shifted.” As can be seen in Fig. 6 and from eqs. 11-13 Yamaguchi expressly teaches to scale lightness, e.g., a colors L* value, when the chroma values, e.g. a* and b*, of a color are scaled. Thus, Yamaguchi does not teach to maintain a lightness of a color when the color is shifted, as required by amended claim 1, which recites: “a position of each color along said gray axis is maintained when said color is shifted.”

For at least the reasons provided hereinabove, it is respectfully submitted that Yamaguchi fails to teach all of the claim elements. Accordingly, it is requested that the

Application No. 09/858,096
Amendment dated March 8, 2004
Reply to Office Action of December 15, 2003

rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Yamaguchi, be reconsidered and withdrawn.

With respect to claim 2, it is respectfully submitted that Yamaguchi does not disclose, teach, or suggest that after the colors have been shifted, the colors are compressed and, if needed, clipped to the output gamut. These steps are required by claim 2 which recites in pertinent part: “compressing the shifted colors in directions of lightness and chroma, and pasting said compressed colors that do not come into said second Gamut to a surface of said second Gamut.” Accordingly, claim 2 distinguishes and is allowable over Yamaguchi and the rejection under 35 U.S.C. § 103(a) should be withdrawn.

Claim 3 requires that the amount by which a color is shifted “becomes *smaller in proportion* to a greater distance from the gray axis of said first Gamut.” It is respectfully submitted that Yamaguchi teaches a shifting amount that becomes *larger* in proportion to distance from the gray axis. *See egs. (10)-(12)*, wherein M4 is a measure of the distance to the gray axis. Accordingly, Yamaguchi does not teach all of the elements of claim 3 and the rejection of claim over Yamaguchi should be withdrawn.

With respect to claim 13, it is respectfully submitted that Yamaguchi fails to disclose teach or otherwise suggest all of the claim elements. Specifically, Yamaguchi does not teach “shifting each color in said image data in the same direction as a direction from a gray axis of said first Gamut towards a gray axis of said second Gamut,” that each color is shifted “by an amount of shifting corresponding to a distance of the color from the gray axis of said first Gamut in a chroma direction,” or that “a position of the color along said gray axis is maintained when said color is shifted.” Accordingly, Yamaguchi does not read on claim 13, and claim 13 is allowable over the cited reference.

Claim 14 has been amended to specify that a gray axis of the input gamut is shifted by an amount between 50% and 90% of the distance to the gray axis of the output gamut. It is respectfully submitted that this feature of claim 14 is not taught by Yamaguchi.

Application No. 09/858,096
Amendment dated March 8, 2004
Reply to Office Action of December 15, 2003

Accordingly, claim 14 is allowable over the art of record, and the rejection under 35 U.S.C. § 103(a) should be withdrawn.

With respect to the rejection of claims 4, 5, and 7 under 35 U.S.C. § 103(a), as being unpatentable over Yamaguchi, and further in view of Beretta, it is respectfully submitted that Beretta fails to make up for the deficiencies in the teachings of Yamaguchi. Therefore, claims 4, 5, and 7, which depend from claim 1, are allowable over the art of record for at least the same reasons as those provided hereinabove. Accordingly, it is respectfully requested that the rejection of claims 4, 5, and 7 under 35 U.S.C. § 103(a) as being unpatentable over Yamaguchi, and further in view of Beretta, be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260.

Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

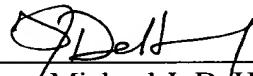
If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be

Application No. 09/858,096
Amendment dated March 8, 2004
Reply to Office Action of December 15, 2003

construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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March 10, 2004

DAI 282639v5